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A system and method is provided for enabling the reuse of algorithms in multiple application frameworks with no alterations required of the algorithm once it is developed. An inverted memory allocation mechanism enables various algorithm modules to be integrated into a single application without modifying the source code of the algorithm modules. An algorithm module is designed in a manner that renders the algorithm module reentrant within a preemptive environment. Each data access instruction of the algorithm module is coded in a manner that renders the algorithm module and all of the data access instructions relocatable. A memory interface is provided within the algorithm module that supports both design-time object instantiation and dynamic object instantiation.